Aid Conditionality:

Does Foreign Aid Prop Up Autocrats, Democrats, or Both?

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Abstract

Does foreign aid prop up recipient governments? Although many people argue that it does, there is little systematic evidence to support this claim. We argue that the impact of aid on government survival depends on both the recipient's regime type and the analyst's time horizons. In the long run, continued aid helps autocrats more than democrats because the former can stockpile this aid for use against future negative shocks. However, because large stocks of aid reduce the marginal impact of current aid, current aid helps democrats more than autocrats. We test and find support for our argument with a survival analysis of 621 leaders in 123 countries from 1960 to 1999. Our results imply that foreign aid should give donors substantial influence over democratic recipients but little influence over autocratic ones. This implies that donors can influence recipients by attaching conditions to aid, but only if such efforts are themselves conditional on the recipient's domestic regime.

Does foreign aid prop up recipient governments? Many scholars and policymakers think so. On the right, free-market economists such as Bauer (1972) and Friedman (1958) decried foreign aid in part because they thought it helped corrupt governments stay in power. On the left, socialists also assert that aid props up "regimes that are complicit in the exploitation of their people" (Carter 1995: 615). At least one U.S. Congressman defends his opposition to foreign-aid bills by saying that aid tends "to prop up bad governments that have mistreated their people" (Kiely 2001). There is thus agreement across the political spectrum that foreign aid has propped up corrupt dictators that would have, and probably should have, otherwise fallen. This view appears, moreover, to have influenced both the perceived desirability and the political feasibility of foreign aid.

Despite its popularity, this view can be questioned on two grounds. First, there is little systematic evidence that aid supports dictators. Although the oft-cited cases of Jean-Claude Duvalier, Ferdinand Marcos, and Mobutu Sese Seko seem to support this claim—all three received substantial aid and remained in office over fifteen years—other dictators, such as Valentine Strasser of Sierra Leone, received more aid than any of the above and stayed in office less than half as long.[1] Second, there is little evidence, and little theoretical reason to believe, that aid supports autocratic leaders but not democratic ones. Both types of leaders need resources to stay in power; hence both should benefit from aid. If so, then aid's political effects may be less malign than the above authors suggest because aid may help democratic as well as autocratic governments.

[1] Duvalier, Marcos, and Mobutu received annual aid flows equal to 6.5, 1.2, and 3.7 percent of gross national income, respectively. Strasser's annual aid averaged 26 percent of gross national income, but he remained in office only four years.

Whether aid promotes political survival, and if so, whose, is a question of growing practical importance. Foreign aid plays a central role in the Millenium Development Goals, the United Nations plan to reduce poverty substantially by 2015.[2] At the 2005 summit of the Group of Eight (G8) industrialized nations, the G8 committed themselves to double aid to Africa by 2010, from $25 billion to $50 billion a year (Stevenson 2005). Foreign aid is thus on the rise, and, not surprisingly, so are concerns about its causes and effects. These concerns have inspired numerous studies on the determinants of foreign aid (Alesina and Dollar 2000; Bueno de Mesquita and Smith 2006; Schraeder, Hook, and Taylor 1998), its effects on recipient policies (Bueno de Mesquita and Smith 2004; Heckelman and Knack 2003; Moss, Petterson and van de Walle 2005; Remmer 2004), and its impact on economic growth (Burnside and Dollar 2004; Easterly 2003). Surprisingly, however—given the concerns expressed above—there has been little systematic research on whether aid supports autocrats, democrats, neither, or both.

We argue that foreign aid indeed promotes political survival, but that its effects depend on both the regime type of recipients and the analyst's time horizons. In the long run, autocratic leaders can stockpile aid as "slack resources" (Bueno de Mesquita, Smith, Siverson, and Morrow 2003), whereas democratic leaders must expend aid as they receive it. Aid accumulated over time thus helps autocratic leaders more than democratic ones. However, larger aid stocks lower the marginal impact of current aid on survival. Because democratic leaders have smaller stocks of resources, current aid helps democratic leaders more than autocratic ones.

Our argument has important implications for debates about aid conditionality, i.e. efforts to influence recipient policy by attaching conditions to foreign aid. Because foreign aid always helps democratic leaders, it should give donors substantial diplomatic leverage over democratic

[2] http://www.undp.org/mdg/goallist.shtml.

recipients. However, because aid helps autocrats only in the long run, it should allow donors to influence autocratic recipients only if donors can make a credible commitment to future disbursements. This strategy is ultimately self-defeating, however, because each disbursement reduces the marginal value of subsequent ones, leading to a loss of influence. Aid thus provides at best fleeting influence over autocrats. Aid conditionality can thus work, but only if its use is itself conditional on the recipient's domestic regime.

Foreign Aid and Political Survival

Why might aid promote political survival? To answer this question, we must first discuss the nature of the survival problem. Most models of political survival (Ferejohn 1986; Downs and Rocke 1994) start from the assumption that governments seek mainly to stay in power. To do this, they must secure support from politically relevant constituents by distributing benefits. This requires resources, the quantity of which depends on (1) government policies and (2) exogenous shocks. Shocks can be either positive or negative and can thus either increase or decrease the availability of resources. Examples of shocks that could influence government resources include home and foreign business cycles, terms-of-trade shocks, and foreign aid.

Because shocks alter government resources, we might expect them to influence government survival. They would not, however, if information were perfect, because fully informed constituents would see that shocks also alter the resources available to the government's challengers. In other words, constituents would see that positive shocks allow both incumbents and challengers to deliver more benefits, while negative shocks force both to deliver less. Shocks would thus create no advantage for either group and, if information were perfect, would not affect government survival.

Perfect information not only renders shocks irrelevant but also makes it hard to understand why leaders ever lose power. If leaders are rational, they should always match their challengers' best offer. Leaders should thus never lose power in a perfect-information world. To explain why leaders do lose power, we must therefore relax the assumption that information is perfect (Ferejohn 1986; Bueno de Mesquita et al 2003).

In Ferejohn's (1986) imperfect-information model, constituents can observe their own utility but cannot observe either government policy or exogenous shocks. They consequently do not know whether to attribute their utility to policy, shocks, or both. For example, if a constituent's utility is low, this could reflect either (1) predatory or rent-seeking behavior on the government's part or (2) a negative shock over which the government has no control. This uncertainty is a problem for constituents: they do not want to support incompetent or predatory incumbents but also do not want to blame competent incumbents for exogenous shocks. Their solution is to choose a threshold utility based on their beliefs about the frequency distribution of shocks and to evict incumbents who do not meet this threshold. Leaders thus lose power when negative shocks are large enough to prevent them from meeting this threshold.

Although negative shocks threaten political survival, leaders can attempt to counter them. When shocks are positive, leaders have more than enough resources to satisfy constituents' threshold expectations. Leaders can thus accumulate surplus resources when shocks are positive and use these resources to offset later negative shocks. Hence, when information is imperfect, both positive and negative shocks influence leaders' survival prospects.

Foreign aid is simply a type of positive shock. The more foreign aid a government receives, the easier it is to counter negative shocks and to accumulate surplus resources. Foreign aid should thus promote political survival.

Although foreign aid should always help leaders, it may help some more than others because different leaders may use aid differently. For example, Bueno de Mesquita et al (2003) argue that domestic political institutions determine how leaders allocate resources. If the effects of aid depend on how it is used, then these institutions may also determine whether and how aid affects political survival. Because our argument builds upon Bueno de Mesquita et al's (2003) model, we briefly summarize this model before discussing our own extensions.

In their model, leaders maintain support by providing a mix of private and public goods. How much of each good leaders provide depends on two characteristics of the political system. First, it depends on the size of the winning coalition (W), i.e. the set of individuals whose support is needed to gain and maintain power. W can vary greatly in size, from a small elite in a military dictatorship to half the electorate in a democracy. The size of W determines the relative cost of private and public goods: as W grows larger, private goods become more expensive because they must be given to more individuals, but public goods become relatively cheaper because, being non-excludable, they can be provided to many people at fixed cost. Leaders thus spend more on private goods when W is small but more on public goods when W is large. Because private goods are enjoyed only by members of W, whereas public goods are enjoyed by everyone, the cost of exclusion from W falls as W grows in size.

Second, the provision of goods also depends on the size of the selectorate (S), i.e. the set of individuals from which members of W are drawn. The size of S can also vary greatly, from a few nobles in hereditary monarchies to all persons of voting age in democracies with universal suffrage. The size of S is important mainly because it affects the probability of exclusion from W. In Bueno de Mesquita et al's (2003) model, the incumbent loses power only when a challenger induces a member of the incumbent's winning coalition to defect and join the

challenger's. Such defection is risky because, whereas the incumbent can credibly promise to keep current members of W in her winning coalition, the challenger cannot.[3] After taking power, the challenger will form a new winning coalition that may or may not include the defector. Because this new coalition will have size W and be drawn from S, the defector's probability of inclusion is W/S, while the probability of exclusion is 1–W/S. The defector's risk of being excluded from future winning coalitions thus falls with the size of W but rises with the size of S.

Because membership in W confers access to valuable private goods, members are reluctant to defect to challengers even when the latter offer them more goods than the incumbent does. The risk of being excluded from the challenger's coalition creates a "loyalty norm" (Bueno de Mesquita et al 2003: 65) that allows incumbents to offer less than they could in the absence of this risk. Because loyalty weakens as W/S rises, incumbents spend more on their supporters and keep less for themselves as W becomes larger or S becomes smaller.

In sum, the size of W affects both the cost and the probability of being excluded from W. When W is large, leaders spend most resources on public goods, so the cost of exclusion from W is low. Moreover, for any S, a larger W implies a higher W/S and a lower risk of exclusion from future winning coalitions. For both reasons, loyalty to the incumbent declines with the size of W. This has important implications for political survival. Because loyalty allows leaders to maintain support with less resources, it also allows them to accumulate slack resources, defined as the difference between available and expended resources. Slack resources allow leaders to

[3] This is because the incumbent knows the "affinities" of all members of her winning coalition, which consists of individuals with the highest affinity for her. The challenger, however, can observe these affinities only after one round in power and thus needs to reshuffle the coalition after one round to include the highest-affinity individuals.

offset negative shocks and thus help leaders survive.[4] Because loyalty declines with W, leaders in small-W systems can accumulate more slack resources than leaders in large-W systems. Leaders in small-W systems are thus more likely to survive.

Winning-coalition size matters because it determines the competitiveness of the political system: a larger W implies more competition. Because political competitiveness is also a defining feature of democracy, W should be and is highly correlated with regime type: the correlation between Bueno de Mesquita et al's (2003) measure of W and the 21-point Polity IV index is .92.[5] Because W is both conceptually and empirically correlated with regime type, we henceforth refer to large-W systems as democracies and to small-W systems as autocracies. The above argument thus implies that autocratic leaders should be able to accumulate more slack resources, and survive longer, than democratic ones.

Bueno de Mesquita et al's model suggests that aid could affect political survival differently in autocracies and democracies. In autocracies, leaders that receive aid can stockpile much of it for future use against negative shocks, thus improving their survival prospects. In democracies, however, leaders must expend most foreign aid as it becomes available and may thus lack resources when negative shocks arise. Foreign aid might thus help autocratic leaders more than democratic ones, at least in the long run. This would, however, only be true if Bueno de Mesquita et al's conclusions, which are based on a perfect-information model, hold up when information is imperfect.

Bueno de Mesquita et al assume that members of W know exactly what resources are available to incumbents and challengers. This allows members of W to demand a fraction of

[4] As Bueno de Mesquita et al (2003: 280) note, "The gap between available and required resources… provides a metric to measure the ease with which leaders survive."

[5] The construction of W and the Polity index is discussed in the following section.

resources commensurate with the size of W, but it also ensures that incumbents never lose power. Hence, as noted above, foreign aid cannot affect leadership survival under perfect information because leaders always survive. We can explain leadership turnover, and motivate a role for foreign aid, by relaxing the assumption of perfect information. Note, however, that doing so could undermine Bueno de Mesquita et al's argument about slack resources because, if members of W do not know what resources are available, then all leaders could withhold resources by claiming that no more are available. All leaders, regardless of the size of W, could thus accumulate slack resources by lying about resource availability.

We solve this problem by assuming, as Bueno de Mesquita et al (2003: 284) do, that members of W adopt a threshold utility that "[does] not exceed the value of the challenger's best offer, assuming a normal economy (the shock equals 0)." In other words, members of W compare the incumbent's offer, not with challenger offers based on actual resources, but with the best offer challengers could make under a statistically normal resource level. Because actual resources sometimes fall short of expected ones, leaders occasionally lose power. However, because the substitution of expected for actual resources leaves the model otherwise unchanged, loyalty to the incumbent still falls with the size of W, and members of W adopt a threshold utility

that rises with the size of W. Autocratic leaders should thus accumulate more slack resources than democratic ones even when information is imperfect.[6]

Given this, how should foreign aid affect political survival in autocracies and democracies? The answer may depend on whether we are interested in the impact of *accumulated* or *current* aid, and hence whether we are interested in aid's long-run or short-run effects. In the long run, autocratic leaders can accumulate more slack foreign aid than democratic ones; hence aid should help autocrats more in the long run. However, if accumulated resources reduce the marginal impact of current aid, current aid may help democratic leaders more than autocratic ones. Aid's effects on political survival may thus depend not only on domestic regime type but also on one's time horizons.

To see this, consider the following model. Suppose that a leader receives two types of resources in every period *t*: foreign aid (A_t) and non-aid resources (R_t). For simplicity, assume that A_t is a constant, while R_t varies due to shocks and is normally distributed around a mean of $\mu(R_t)$. Members of W cannot observe the value of R_t in any period, but they do know the mean values of R_t and A_t, which provide the basis for their threshold utilities. Each coalition member has a threshold utility of $\frac{1}{W}\alpha\mu(R_t + A_t)$, where $\mu(R_t + A_t)$ is the mean value of total resources in every period. W is the number of individuals in the winning coalition; hence each member

[6] This solution to the informational problem raises a second, more difficult, question: If selectors cannot observe policy or shocks directly, how do they estimate what a normal economy looks like? A complete answer to this question is beyond the scope of this paper, but we speculate that selectors could obtain such information through retrospective voting rules that depose incumbents that fail to live up to their promises. In other words, if a leader promises X benefits but then fails to deliver them (and is deposed), selectors can infer that, because leaders want to stay in office, resources must have been insufficient to provide X. This generates a data point, and, over time, iterations of this process generate information about the distribution of resources. We develop this argument in more depth in Appendix 1.

expects to receive an equal share of expected resources. α is a parameter between 0 and 1 that rises with the degree of democracy and that determines what fraction of expected resources the incumbent must spend on the winning coalition to maintain power. If the political system is perfectly uncompetitive, the incumbent spends nothing. If it is perfectly competitive, the incumbent must spend the expected value of resources. Because all real-world political systems lie between these extremes, incumbents must always spend more than 0 but less than 100 percent of expected resources.[7]

In every period, the incumbent survives if actual resources are sufficient to satisfy all coalition members' threshold utilities. In period 1, this means that the incumbent survives if $R_1 + A_1 \geq \alpha\mu(R_t + A_t)$. If available resources exceed demanded resources, leaders save the difference for future use. Slack resources accumulated in previous periods and available at time *t* are denoted as σ_t. The incumbent's probability of survival in period *n* is thus $\Pr[R_n + A_n + \sigma_n \geq \alpha\mu(R_t + A_t)]$, i.e. the probability that current resources plus previously accumulated slack resources will be sufficient to satisfy coalition members' demands.

In each period, slack resources are the difference between actual resources and constituent demands; hence, by period *n*, σ_n is $\sum_{t=1}^{n-1} R_t + A_t - \alpha\mu(R_t + A_t)$. Over repeated trials, the expected value of $R_t + A_t$ is $\mu(R_t + A_t)$; hence the expected value of slack resources is $(n-1)(1-\alpha)\mu(R_t + A_t)$. This means that the leader's probability of survival in period *n* can, with some rearranging of terms, be expressed as $\Pr[R_n \geq \mu(R_t + A_t)[1 - n(1-\alpha)] - A_n]$.

[7] W is always greater than 0 but less than the entire selectorate. Moreover, because oversized winning coalitions are rare, W rarely exceeds S/2 +1 (Bueno de Mesquita et al 2003). Hence, although incumbents must always satisfy someone, they can also always exploit their credible commitment to the current W to offer less than challengers.

The last inequality tells us several things. First, if the political system is perfectly competitive (α =1), the incumbent's probability of re-appointment does not change over time: it is always the probability that current resources will equal or exceed expected resources. This probability does not change because incumbents do not accumulate slack resources.[8] Second, if the system is not perfectly competitive, the probability of survival increases over time. As n rises, the value of the right-hand-side expression falls, hence larger and larger negative shocks are needed to unseat incumbents. This occurs because leaders' slack resources increase over time. Third, the probability of survival rises faster when the expected value of resources is high because slack resources increase with available resources. Fourth, the probability of survival rises more rapidly when α, and hence the degree of democracy, is lower. Hence, over the long run, any increase in resources helps autocratic leaders more than democratic ones because the former keep more of these resources as slack. Fifth, however, the impact of current resources on survival declines over time at a rate that is faster for autocrats. This is because the frequency distribution of shocks becomes less dense as the selectors' threshold recedes from the mean level of resources, or, more intuitively, because additional resources have little marginal impact once the probability of survival is very high. Hence, after the initial period, current resources help democratic leaders more than autocratic ones.

The above paragraph refers to the effects of aggregate (aid and non-aid) resources on political survival rather than those of aid *per se*. The effects of aid are somewhat more complicated because the impact of accumulated aid on survival depends on the availability of non-aid resources. A numerical example will illustrate this point.

[8] This does not mean that incumbents never accumulate slack resources, but that the long-run expected value of these resources is zero. In other words, slack resources accumulated in some periods are fully expended in others.

First consider the extreme case where non-aid resources have an average value of zero. Specifically, assume that R_t follows a normal distribution with a mean of 0 and a standard deviation of 1. This ensures that, on average, non-aid resources do not contribute to slack resources and that any changes in the probability of survival are entirely attributable to aid. Although this is unrealistic, it has the advantage of isolating the effects of aid independent of non-aid resources. We set A_t equal to .1 and assign α's of .2 and .8 to autocratic and democratic leaders, respectively, although we emphasize that these parameter values are purely illustrative and do not affect our qualitative conclusions. Given these values, we estimate the effects of aid on the probability that R_t will exceed the critical threshold for both autocratic and democratic leaders over time. These effects are shown in Figure 1.

Figure 1 about here

1(a) presents the evolution of survival probabilities over time for an autocratic leader, indicated by the solid line, and a democratic leader, indicated by the dashed line. Because a lower α implies a lower threshold in every period, the autocratic leader always has a higher probability of survival than the democratic one. This probability also rises more rapidly for the autocrat because autocrats accumulate slack resources more quickly than democrats.

1(b) shows the impact of accumulated aid on the probability of survival, calculated as the difference between the probability of survival when $A_t = .1$ in every period and the probability of survival when $A_t = 0$ in every period. Because the probability of survival in the absence of aid and non-aid resources is a constant, 1(b) looks identical to 1(a), although 1(b) isolates the impact of accumulated aid. This impact rises more rapidly for the autocratic leader than for the democratic one because the former accumulates slack resources more quickly.

1(c) shows the impact of current aid on the probability of survival, calculated as the difference between the probability of survival when $A_t = .1$ in the current period and the probability of survival when $A_t = 0$ in the current period, holding aid in all previous periods constant at .1. Hence, to calculate the impact of aid in period 10, we hold aid in periods 1-9 constant and compare the aid and non-aid outcomes in period 10. This allows us to see how current aid affects the probability of survival, taking all previous aid as given.

1(c) is virtually the mirror image of 1(a): as the probability of survival rises, the impact of current aid on this probability falls, approaching 0 as the probability of survival approaches 1. The impact of current aid thus falls over time. Although this is true for both leaders, this impact falls more rapidly for the autocratic one because her probability of survival rises more rapidly. More rapid accumulation of slack resources thus leads to a faster decline in the marginal impact of additional aid. Hence, after the initial period, current aid has a larger impact on the democratic leader's probability of survival.

Now consider the more realistic case in which non-aid resources are positive. Specifically, assume that the mean value of non-aid resources is .1 but that all other parameter values remain as before. Survival probabilities in this new scenario are shown in Figure 2.

Figure 2 about here

2(a) is very similar to 1(a), in that the probability of survival is always higher and rises faster for autocrats than for democrats. The only noteworthy difference is that autocrats now have even more of an advantage over democrats because they have an additional resource flow that can be accumulated as slack. 2(c) is also very similar to 1(c), in that current aid always helps democrats more than autocrats. The asymmetric effects of current aid are also more

pronounced than before because the more rapid rise in the autocrat's probability of survival reduces the marginal impact of aid for autocrats still further. Higher levels of non-aid resources thus strengthen our argument about the current effects of aid.

Figure 2(b) indicates, in contrast, that the existence of positive non-aid resources alters the effects of cumulative aid. As before, cumulative aid initially has a larger impact on autocratic than democratic survival because autocrats stockpile more of this aid as slack. Now, however, the impact of cumulative aid eventually begins to decline, and does so earlier for autocrats than for democrats. There is thus a reversal point at which the impact of cumulative aid on survival becomes larger for democrats than for autocrats. The reason is that, because autocrats accumulate non-aid resources quickly, they relatively quickly attain a high probability of survival even in the absence of aid. These accumulated non-aid resources, and the associated high probability of survival, reduce the marginal impact of cumulative aid. In other words, after some point, the autocrat's greater ability to stockpile aid helps him little because he can virtually ensure his survival even in the absence of aid.

Although cumulative aid can, in theory, help democrats more than autocrats, we believe that in practice it will tend to help autocrats more. The reversal point at which this stops being the case occurs only when the autocrat's probability of survival is extremely high: in our example, this "reversal probability" is .99. For the values of α used in our example (.2 and .8), we have been unable to find combinations of other parameter values that generate a reversal probability below .95. Reversal probabilities can be as low as .85 when values of α are very similar (e.g. .2 and .3, .7 and .8), but these cases are of questionable relevance because (1) there is then almost no difference between the political competitiveness of democracies and autocracies, and (2) such reversal probabilities occur only when the value of aid is trivial

compared with that of other resources. Hence, although cumulative aid could help democrats more than autocrats in theory, we believe that the conditions under which this occurs are, in practice, very rare. We thus propose the following hypotheses:

H1: Continued foreign aid flows will, over time, promote the survival of autocratic leaders more than that of democratic leaders.

H2: Current aid will, at any given time, promote the survival of democratic leaders more than that of autocratic leaders.

Although these hypotheses are novel, they are also quite intuitive. On the one hand, some autocrats clearly keep a lot of aid for themselves: for example, Suharto, Marcos, and Mobutu together stole about $50 billion of aid sent to their respective countries over the course of their careers (Transparency International 2004). Although we do not know what they did with all of this aid, it seems likely that some was used to buy political support in times of crisis and hence to prolong their rule. On the other hand, it seems obvious that resources yield diminishing marginal returns: for example, in considering whether aid can be used to influence recipient governments, Wintrobe (2001: 52) notes that if a dictator such as Marcos is safely in office, "there is no point in giving him aid, because all he will do with the money is buy more shoes." In other words, if resources are high enough to guarantee survival, additional resources may not even be used for this purpose. In short, our hypotheses seem intuitively sensible. Whether they are empirically supported is a question to which we now turn.

Analysis

We examine the impact of foreign aid on leadership survival using a discrete-time event history model. Event history models are appropriate for analysis of phenomena that exhibit time dependency, and many studies show that leaders' political survival is dependent on the length of time they have been in office (Bienen and Van de Walle 1991; Bueno de Mesquita and Siverson 1995; Chiozza and Goemans 2004; Marinov 2005). Because we do not want to make arbitrary assumptions about the form of this duration dependency, we follow Box-Steffensmeier and Jones (2004) and use a conditional logit Cox model to estimate the effects of aid.

Dependent Variable

As is standard in models of political survival, the dependent variable is leadership *turnover* and takes the value of 0 for years when a leader is in office and 1 on the year that the leader leaves office.[9] To estimate a conditional logit Cox model, observations are grouped by the risk set at time t_i: in this case, a variable that records the number of years that a leader has been in office. Coefficients for independent variables are then estimated conditional on the composition of these risk sets. The sample includes all leaders from developing and transition countries[10] for which data are available. It includes 621 leaders from 123 countries from 1960 to 1999. A full list of donors and recipients is provided in Appendix 2. Summary statistics for all variables are presented in Appendix 3.

[9] Data on leadership turnover are from the Archigos Dataset of Leaders 1875-2004 compiled by Goemans, Gleditsch, and Chiozza (http://mail.rochester.edu/~hgoemans/data.htm). Like previous studies on leadership turnover (Bueno de Mesquita and Siverson 1995; Chiozza and Goemans 2004), leaders that die a natural death while in office are treated as censored observations, i.e. the dependent variable is coded zero on the year that they leave office due to natural death.

[10] As defined by the Organization for Economic Cooperation and Development (OECD)'s Development Assistance Committee (DAC).

Independent Variables

We include two measures of foreign aid in various models. *Current Aid*$_{i,t\text{-}1}$ is leader *i*'s annual net receipts of official development assistance (ODA) as a percentage of gross national income (GNI) lagged by one year. We lag this and all other independent variables to ensure that they are realized before the dependent variable is observed. *Cumulative Aid*$_{i,t\text{-}1}$ is a running sum of current aid flows over leader *i*'s tenure in office. It measures each leader's potential stock of aid in each year: that is, it represents the total aid each leader would have if she did not spend aid from previous years. Our theory implies that this measure should be closely related to actual total aid for autocrats, who are able to accumulate aid, but should be weakly if at all related to actual total aid for democrats, who are less able to accumulate slack resources.

ODA consists of official grants and loans at concessional rates given for the expressed purpose of promoting economic development.[11] We include ODA from all governments and multilateral institutions for which data are available.[12] We express aid as a percentage of GNI because the impact of aid on political survival should depend on both the number of people whose support must be purchased and their income level: for a given income level, aid will go further if there are fewer citizens, and for a given number of citizens, aid will go further if citizens are poorer. As GNI is the product of population and per capita income, it controls for both. We log both measures to reduce skewness.[13]

Democracy$_{i,t\text{-}1}$ is the degree of democracy in leader *i*'s country. For robustness, we employ two different measures of democracy. The first is Bueno de Mesquita et al's (2003)

[11] See the OECD's DAC Statistical Reporting Directives (http://www.oecd.org/document/4/0,2340,en_2649_34447_1918532_1_1_1_1,00.html).

[12] Data for ODA and GNI are from the OECD's DAC online databases (http://www.oecd.org/dataoecd/50/17/5037721.htm).

[13] We add 1 prior to logging to keep cases of zero aid in the analysis.

measure of W. It is based on the openness and competitiveness of executive recruitment and ranges from 0 to 1, with 1 indicating the largest winning coalitions.[14] The second is the multidimensional 21-point Polity IV index, which ranges from -10 for full autocracies to +10 for full democracies.[15] For presentational convenience, we recode the Polity index so that it ranges from 0 to 1, with 1 representing the most democratic systems. Previous work shows that the probability of leadership change is higher in democracies than in autocracies; hence the democracy coefficient should be positive (Bueno de Mesquita et al 2003; Chiozza and Goemans 2004; Marinov 2005).

To determine whether the effects of cumulative and current aid depend on recipient regime type, we interact both aid measures with democracy and calculate aid coefficients conditional on the degree of democracy. Our theory implies that the $Cumulative\ Aid_{i,t\text{-}1} \times Democracy_{i,t\text{-}1}$ coefficient should be positive and that the coefficients for cumulative aid should become larger (less negative) as the degree of democracy rises. In other words, the survival-enhancing effects of cumulative aid should be weaker in more democratic countries because more democratic leaders have stockpiled less of this aid. In contrast, our theory implies that the $Current\ Aid_{i,t\text{-}1} \times Democracy_{i,t\text{-}1}$ coefficient should be negative and that the coefficients for current aid should become smaller (more negative) as the degree of democracy rises. In other words, the survival-enhancing effects of current aid should be stronger in more democratic countries because democracies have smaller stocks of accumulated aid and other resources.

Control Variables

[14] For a detailed description of the index, see pp.132-140 of Bueno de Mesquita, et.al.(2003).

[15] See http://www.cidcm.umd.edu/polity/.

Although Bueno de Mesquita et al's (2003) model implies that small-W leaders should survive longer than large-W leaders for any given selectorate size, it also implies that increases in the size of the selectorate will increase the probability of survival. We thus control for selectorate size in the model with W. $S_{i,t-1}$ is a trichotomous measure based on legislative selection mechanisms, which, according to Bueno de Mesquita et al (2003), provide a rough indication of the magnitude of the selectorate. S is coded 0 for countries without legislatures, .5 for legislatures chosen by heredity, ascription, or by the effective executive, and 1 for legislatures whose members are directly or indirectly elected by popular election. Because a larger S reduces the probability of leadership change, S should be negatively signed.

We also control for natural resources, which leaders could use to maintain power. Because natural resource industries tend to be state-owned or highly concentrated, they provide leaders with a lucrative and easily taxed source of funds. Although data on fuel and mineral exports are available, their inclusion would lead to a loss of over one-third of our cases, thus inducing considerable sample bias. We thus use a dummy for membership in the Organization of Petroleum Exporting Countries (OPEC) as a proxy for natural resource wealth. Although this accounts only for oil wealth, oil is one of the most lucrative of natural resources. Because oil wealth should reduce the probability of leadership change, OPEC should be negatively signed.

We also include numerous controls that previous work has shown to influence political survival. First, we control for economic conditions because studies show that the hazard of losing office is higher when per capita income is low and when economic performance is poor (Chiozza and Goemans 2004; Londregan and Poole 1996). We thus include *Per Capita Income*$_{i,t-1}$ and *Economic Growth*$_{i,t}$, the percentage change in per capita income from t-1 to t.[16]

[16] Data for economic conditions are from the World Bank's World Development Indicators (2005).

Second, we include *Leader Age*$_{i,t}$, each leader's age at time *t*, because previous work shows that older leaders are more likely to lose power (Bienen and Van de Walle 1991). Third, we control for external pressures on leaders because research shows that economic sanctions increase the risk of losing office while military crises decrease it (Chiozza & Goemans 2004; Marinov 2003). *Economic Sanctions*$_{i,t-1}$ is coded 1 if country *i* was under sanctions from another state at time *t*-1and 0 otherwise. *War*$_{i,t-1}$ and *Military Crisis*$_{i,t-1}$ are coded 1 if country *i* was involved in a war or militarized interstate crisis at time *t*-1 and 0 otherwise. Finally, because domestic conflict increases the risk of losing office (Chiozza & Goemans 2004), we include *Civil War*$_{i,t-1}$, which is coded 1 if a leader was engaged in a civil war at time *t*-1 and 0 otherwise.[17]

Results

Table 1 about here

Table 1 presents our results. Models 1 and 2 present the effects of cumulative aid on leader turnover, whereas models 3 and 4 show the effects of current aid on turnover. Models 1 and 3 employ W as the measure of democracy while Models 2 and 4 employ the Polity index. Results for all controls are consistent with expectations. Turning to the variables of interest, models 1 and 2 show that cumulative aid reduces the probability of losing office for leaders in the most autocratic systems: the cumulative aid coefficients, which give the impact of cumulative aid when democracy equals zero, are negative and statistically significant. Models 1 and 2 also indicate that the impact of cumulative aid on turnover is smaller at higher levels of

[17] Data on engagement in war, military crisis, and civil war as well as leader's age are from Chiozza & Goemans (2004). Data on economic sanctions are from Marinov (2003).

democracy: the interaction terms are positively signed, indicating that the impact of cumulative aid on turnover is less negative in more democratic systems.

To assess this conditional effect more fully, we need to calculate the marginal impact of aid, and its associated confidence interval, at different levels of democracy. In nonlinear models, the effect of variable X depends not only on the values of other variables but also on the value of X itself. We thus calculate the impact of a one-standard deviation increase in cumulative aid from its mean on the predicted probability of turnover as democracy increases from zero to one. This impact and its 90 percent confidence interval are presented in Figure 3.

Figure 3 about here

3(a) and 3(b) present results for W and the Polity index, respectively. The vertical axes indicate the change in probability caused by a one-standard deviation increase in cumulative aid, while the horizontal axes indicate the degree of democracy. The solid lines show how the impact of cumulative aid changes as the degree of democracy rises, while the dashed lines indicate 90 percent confidence intervals. Both 3(a) and 3(b) show that the impact of cumulative aid on the probability of turnover becomes weaker as the degree of democracy rises. In very undemocratic systems, cumulative aid has a significant negative impact on the probability of turnover and thus reduces the risk of losing office. This impact becomes smaller as the degree of democracy rises, however, eventually becoming statistically indistinguishable from zero when the W and the transformed Polity measures exceed a value of about .6. Figure 3 thus supports H1: cumulative aid indeed helps autocratic leaders more than it helps democratic ones.

Models 3 and 4 show the impact of current aid on the probability of turnover. The coefficient for current aid, which gives the impact of current aid when democracy equals zero, is

negative but insignificant, indicating that current aid has no significant effect on turnover in the most autocratic systems. As expected, the coefficients for the interaction terms are negative, indicating that the negative impact of current aid on turnover grows larger as the degree of democracy rises. Again, to examine these conditional effects in greater depth, we calculate the impact of a one-standard deviation increase from the mean in current aid on the predicted probability of turnover at different levels of democracy. Results are shown in Figure 4.

Figure 4 about here

As Figure 4 shows, the negative impact of current aid on the probability of turnover grows larger as the degree of democracy rises. In highly autocratic systems, this impact is very close to zero and is not statistically significant. This impact grows stronger as the degree of democracy rises, however, eventually becoming statistically significant when W and the transformed Polity index exceed a value of about .5. Figure 4 thus supports H2: current aid helps democratic leaders more than it helps autocratic ones.

Our theory was framed, not in terms of turnover, but in terms of survival. For example, figures 1 and 2 depicted the relationship between aid and survival probabilities. To facilitate comparison between our theoretical predictions and our empirical results, we present conditional relationships between aid and predicted probabilities of leadership survival in Figure 5.[18]

Figure 5 about here

5(a) plots predicted probabilities of survival, on the vertical axis, against cumulative aid as a percentage of GNI, on the horizontal axis. The solid and dashed lines show predicted

[18] Survival probabilities are simply 1 minus turnover probabilities.

probabilities for full autocracies and full democracies, respectively, with all other variables held constant at their means.[19] 5(b) plots survival probabilities against current aid as a percentage of GNI. In both figures, aid values range from 0 to the 75th percentile of our sample, which corresponds to about 50 percent of GNI for cumulative aid and about 8 percent of GNI for current aid. It is worth noting that both aid distributions are left-skewed: 50 percent of the cumulative and current aid values are under 11 percent and 2.5 percent of GNI, respectively.

Both 5(a) and 5(b) show, as expected, that the probability of survival is always higher for autocrats than for democrats. However, these figures also reveal distinct differences in the way that cumulative and current aid affect autocrats and democrats. 5(a) indicates that cumulative aid helps autocrats more than democrats: increasing cumulative aid from 0 to 50 percent of GNI increases the probability of autocratic survival by about .06, from .89 to .95, but the same shift in aid increases the probability of democratic survival by only .01, from .80 to .81. These differences are particularly striking given that autocrats have a high probability of survival even in the absence of cumulative aid, which should reduce aid's marginal effects. Note also that, because the marginal effects of aid decline, cumulative aid has the greatest impact when it is less than 20 percent of GNI, and hence in the most dense part of the distribution. In contrast, 5(b) shows that current aid helps democrats more than autocrats. Increasing current aid from 0 to 8 percent of GNI boosts the probability of democratic survival by .07, from .77 to .84. However, the same change in current aid leaves the probability of autocratic survival virtually unchanged at .93. Figures 5(a) and 5(b) thus support hypotheses 1 and 2, respectively.

Some readers may be concerned that our results reflect the endogeneity of foreign aid to leadership turnover. Specifically, one could argue that the observed relationships exist because

[19] W equals zero for full autocracies and one for full democracies.

donors condition aid on leaders' survival prospects. One common way of addressing such concerns is to perform instrumental-variable regressions. However, although this would be useful, we have been unable to find appropriate instruments, and instrumental-variable results based on weak instruments are inconsistent (Bound, Jaeger, and Baker 1995). We thus evaluate the likelihood of endogeneity problems on theoretical rather than empirical grounds.

Suppose first that aid does *not* promote survival for either autocrats or democrats. Under what circumstances would the endogeneity of aid to survival produce the observed relationships? First, to explain our results for cumulative aid, donors would have to target long-term aid toward more stable autocratic leaders (producing a positive relationship between cumulative aid and autocratic survival) while giving long-term aid to democratic leaders randomly (producing no relationship between cumulative aid and democratic survival). However, to explain our results for current aid, the opposite conditions would have to prevail: donors would have to target current aid toward more stable democratic leaders while giving current aid to autocratic governments randomly. Not only is it difficult to imagine why, theoretically, donors would pursue such different conditioning strategies in the short and long run, but this argument also lacks empirical support: in general, leaders that receive high current aid also have high cumulative aid and vice-versa, indicating that donors are (un)generous to the same leaders in both the short and the long run.

Now suppose that aid *does* promote survival for both autocrats and democrats. How, in this case, could the endogeneity of aid to survival explain our results? To explain the cumulative-aid results, donors would have to give long-term aid to to autocratic leaders randomly (producing a positive aid-survival relationship) while targeting long-term aid toward more unstable democratic leaders (producing no relationship). However, to explain the current-

aid results, donors would have to target current aid toward more unstable autocratic leaders while giving aid to democratic leaders randomly. Again, it is not clear why donors would adopt such different conditioning strategies in the short and the long run, nor is there empirical evidence that they do. Hence, although we can conceive of scenarios in which our results would reflect endogeneity problems, these scenarios are, in our view, somewhat strained.

Conclusion

Although many people have argued that foreign aid props up dictators, few have claimed that it props up democrats, and no one has systematically examined whether either assertion is empirically true. We argue, and find, that aid has both effects. Over the long run, continued aid flows contribute significantly to autocratic survival because autocrats can stockpile this aid and use it in times of crisis. In the short run, however, aid has a larger impact on democratic survival because democrats have fewer alternative resources to fall back on. Our study thus supports popular arguments about aid and political survival, but it also adds to and qualifies these arguments in important ways.

It is important to note that the weak relationship between cumulative aid and democratic survival does *not* mean that continued aid cannot help democrats for long periods of time. Rather, it means that aid received in past periods is unimportant for democrats' current survival because little of this aid is saved. Current aid, in contrast, always helps democrats, which means that donors can promote democratic survival for as long as they choose to give aid. This result, as well as those for autocrats, has important implications for the efficacy of aid conditionality.

Aid donors often seek to influence recipient policies by attaching conditions to aid. For example, the World Bank often demands microeconomic reforms in exchange for aid, while the International Monetary Fund often seeks macroeconomic stabilization. The efficacy of this

strategy is questionable, however, as numerous studies show that aid conditionality is ineffective (Collier 1997; Haggard 1986; Mosley, Harrigan and Toye 1995; Remmer 1986). Our results suggest that this should be true for autocracies but not for democracies. The apparent ineffectiveness of aid conditionality may thus result from pooling the two regime types together.

Foreign aid helps autocrats only when given for extended periods of time. This implies that aid donors should be able to influence autocrats only if they can make a credible commitment to give more aid in the future. This need to make credible commitments may reduce donor influence over autocrats in at least two ways. First, credible commitments are difficult to make, and to the extent that aid commitments are not credible, recipients have little incentive to honor donor conditions. Second, even if commitments can be made credible, efforts to influence autocrats through continued aid flows are ultimately self-defeating. Each disbursement of aid contributes to the autocrat's slack resources, thus reducing the marginal value of additional current and future aid. Hence, paradoxically, the more aid donors give to autocrats, the less influence they will have. We thus believe that foreign aid provides donors with at best fleeting influence over autocrats.

In contrast, foreign aid always helps democratic leaders. It should thus give donors substantial influence over democratic recipients. Moreover, this influence should not decline over time as the cumulative aid tally mounts, because democratic leaders cannot stockpile aid from previous years. We thus believe that foreign aid provides donors with a consistent source of influence over democratic recipients. This implies that aid conditionality can work, but that its efficacy is conditional on the regime type of recipients. Given the importance of conditionality to current debates about foreign aid, this hypothesis merits further research.

Appendix 1

We assume that, under imperfect information, selectors discipline leaders by choosing a threshold utility based on statistically normal resource levels. This begs the question: If selectors cannot observe either policy or shocks, how can they estimate what a normal economy looks like? Suppose, for example, that leaders in a given country always lie about the state of the economy, systematically understating the availability of resources so that they can keep more for themselves. Because members of W can observe neither policy nor shocks, their threshold utility must be based solely on the utility they have historically received. However, the latter may be less a function of normal resource availability than of the leader's propensity to lie. There may thus be no relationship between the size of W and resource expenditure because, even if constituent demands increase with the size of W, these demands are expressed as a proportion of constituent estimates of normal resources, which can be manipulated by rulers. In equilibrium, large-W leaders might simply understate available resources by more, thus offsetting the impact of W on resource expenditure.

To solve this problem, selectors need a mechanism that allows them to infer actual resource levels from leader behavior. Although modeling this mechanism would be a complex task that goes beyond the scope of this paper, we sketch out its basic elements here. Suppose that, as in Bueno de Mesquita et al, voters choose between an incumbent leader (L) and a challenger (C). Every round, C offers to spend a level of resources RC, while L offers αRC, where α is a parameter between 0 and 1 that rises with W/S and equalizes the risk-adjusted value of L's and C's offers. Hence, as in Bueno de Mesquita et al, L's offer is always lower than C's but rises with the size of W. In this case, however, selectors do not know whether these offers accurately reflect available resources.

Now, suppose that selectors employ both prospective and retrospective voting rules: they support candidates that offer them greater expected utility but oppose incumbents that fail to deliver on pre-appointment promises. Selectors thus reappoint L if α is sufficiently large but depose L if a large negative shock prevents L from delivering αRC. If the latter outcome occurs, the game could continue in various ways: C could become the new L, or multiple C's could compete for L's position. How the game continues is perhaps less important than the fact that (1) competition, which drives offers up, (2) the retrospective voting rule, which holds leaders to their promises, and (3) negative shocks, which periodically prevent leaders from meeting their obligations, guarantee that leaders will sometimes lose power.

Every loss of power generates a data point. Selectors know that leaders want to stay in power and thus, given the retrospective voting rule, always keep their commitments if resources allow. Hence, when leaders fail to keep commitments, it must be because resources are too low. This does not reveal the exact level of resources, but it does tell selectors that resources are below the promised level. Over time, selectors see that some commitments cause more frequent losses of power than others. By observing the relationship between resource commitments and the frequency of turnover, selectors can estimate both the frequency distribution of resources and their average level. As this information accumulates, the nature of the game will change: some offers will cease to be credible, and, as selectors identify mean resource levels, they will abandon retrospective rules based on candidate commitments in favor of ones that employ thresholds based on normal resource availability. We believe that such dynamics allow selectors to develop such thresholds, which in turn enable small-W leaders to accumulate more slack resources than large-W ones even when information is imperfect.

Appendix 2. List of Aid Donors and Recipients				
Bilateral Donors	Multilateral Donors	Recipients		
Australia	African Development Bank	Afghanistan	Gabon	Nicaragua
Austria	Arab Agencies	Albania	Gambia	Niger
Belgium	Asian Development Bank	Algeria	Georgia	Nigeria
Canada	Caribbean Development Bank	Angola	Ghana	Oman
Czech Republic	Council of Europe	Argentina	Guatemala	Pakistan
Denmark	European Bank for Reconstruction and Development	Armenia	Guinea	Panama
Finland	European Commission	Azerbaijan	Guinea-Bissau	Papua New
France	Global Environmental Facility	Bahrain	Guyana	Guinea
Germany	International Bank for Reconstruction and Development	Bangladesh	Haiti	Paraguay
Greece	International Development Association	Belarus	Honduras	Peru
Hungary	International Finance Corporation	Benin	Hungary	Philippines
Iceland	International Fund for Agricultural Development	Bhutan	India	Poland
Ireland	Inter-American Development Bank	Bolivia	Indonesia	Qatar
Italy	International Monetary Fund	Bosnia	Iran	Romania
Japan	Montreal Protocol	Botswana	Iraq	Russia
Korea	Nordic Development Fund	Brazil	Israel	Rwanda
Latvia	United Nations Development Programme	Bulgaria	Ivory Coast	Saudi Arabia
Lithuania	United Nations Population Fund	Burkina Faso	Jamaica	Senegal
Luxembourg	United Nations High Commissioner for Refugees	Burundi	Jordan	Sierra Leone
Netherlands	United Nations Children's Fund	Cambodia	Kazakhstan	Singapore
New Zealand	United Nations Relief and Works Agency	Cameroon	Kenya	Slovakia
Norway	World Food Programme	Cent. Afr. Republic	Kuwait	Slovenia
Poland	Other UN agencies	Chad	Kyrgyzstan	Somalia
Portugal		Chile	Laos	South Africa
Slovak Republic		China	Latvia	Sri Lanka
Spain		Colombia	Lebanon	Sudan
Sweden		Comoros	Lesotho	Swaziland
Switzerland		Congo, Brazzaville	Liberia	Syria
Turkey		Congo, Kinshasa	Libya	Tajikistan
United Kingdom		Costa Rica	Lithuania	Tanzania
United States		Croatia	Madagascar	Thailand
USSR		Cyprus	Malawi	Togo
Arab Countries		Czech Republic	Malaysia	Trinidad
		Djibouti	Mali	Tunisia
		Dominican Rep	Mauritania	Turkey
		Ecuador	Mauritius	Turkmenistan
		Egypt	Mexico	Uganda
		El Salvador	Moldova	Ukraine
		Equatorial Guinea	Mongolia	Uruguay
		Eritrea	Morocco	Uzbekistan
		Estonia	Mozambique	Venezuela
		Ethiopia	Namibia	Zambia
		Fiji	Nepal	Zimbabwe

Appendix 3. Summary Statistics					
Variable	Obs.	Mean	Std. Dev.	Minimum	Maximum
Leader Turnover	3174	.144	.351	0	1
W	3153	.506	.288	0	1
Polity	3174	.441	.349	0	1
Cumulative Aid	3174	37.394	73.194	0	958.79
Current Aid	3174	6.020	9.051	0	95.555
ln(Cumulative Aid)	3174	2.450	1.623	0	6.866
ln(Current Aid)	3174	1.399	1.019	0	4.570
Selectorate Size	3153	.807	.384	0	1
Opec Membership	3174	.076	.265	0	1
Economic Growth	3174	1.186	6.274	-44.707	66.640
Per Capita Income	3174	2220	4819	67.140	56766.41
Economic Sanctions	3174	.166	.372	0	1
Interstate War	3174	.022	.148	0	1
Military Crisis	3174	.070	.256	0	1
Civil War	3174	.098	.298	0	1
Leader Age	3174	55.479	11.777	14	93
Time in Office	3174	5.785	6.385	0	34

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Table 1. Foreign Aid, Regime Type, and Leadership Turnover				
Explanatory Variable	Model 1 (W)	Model 2 (Polity)	Model 3 (W)	Model 4 (Polity)
Cumulative $Aid_{i,t-1}$	-0.204** (.087)	-0.169** (.071)		
Cumulative $Aid_{i,t-1} \times Democracy_{i,t-1}$	0.184 (.132)	0.137 (.104)		
Current $Aid_{i,t-1}$			-0.033 (.121)	-0.030 (.107)
Current $Aid_{i,t-1} \times Democracy_{i,t-1}$			-0.156 (.191)	-0.132 (.161)
$Democracy_{i,t-1}$	0.710* (.390)	0.857** (.271)	1.302** (.376)	1.286** (.267)
Selectorate $Size_{i,t-1}$	-0.765** (.197)		-0.760** (.196)	
Opec $Membership_{i,t-1}$	-0.341 (.240)	-0.105 (.236)	-0.285 (.239)	0.065 (.236)
Economic $Growth_{i,t}$	-0.045** (.008)	-0.046** (.008)	-0.045** (.008)	-0.046** (.008)
Per Capita $Income_{i,t-1}$	-0.003* (.001)	-0.004** (.001)	-0.003* (.001)	-0.004** (.002)
Economic $Sanctions_{i,t-1}$	0.404** (.134)	0.391** (.134)	0.428** (.134)	0.422** (.134)
Interstate $War_{i,t-1}$	-1.148** (.534)	-0.970* (.532)	-1.116** (.533)	-0.927* (.531)
Military $Crisis_{i,t-1}$	-1.329** (.305)	-1.307** (.306)	-1.344** (.306)	-1.327** (.307)
Civil $War_{i,t-1}$	0.360** (.163)	0.337** (.164)	0.351** (.163)	0.329** (.164)
Leader $Age_{i,t}$	0.018** (.005)	0.011** (.005)	0.019** (.005)	0.012** (.005)
Leaders	621	621	621	621
Countries	123	124	123	124
Observations	3153	3174	3153	3174
*p<.10 **p<.05 Standard errors in parentheses				

Figure 1. Conditional Effects of Aid on Survival Probabilities, Average Non-Aid Resources = 0

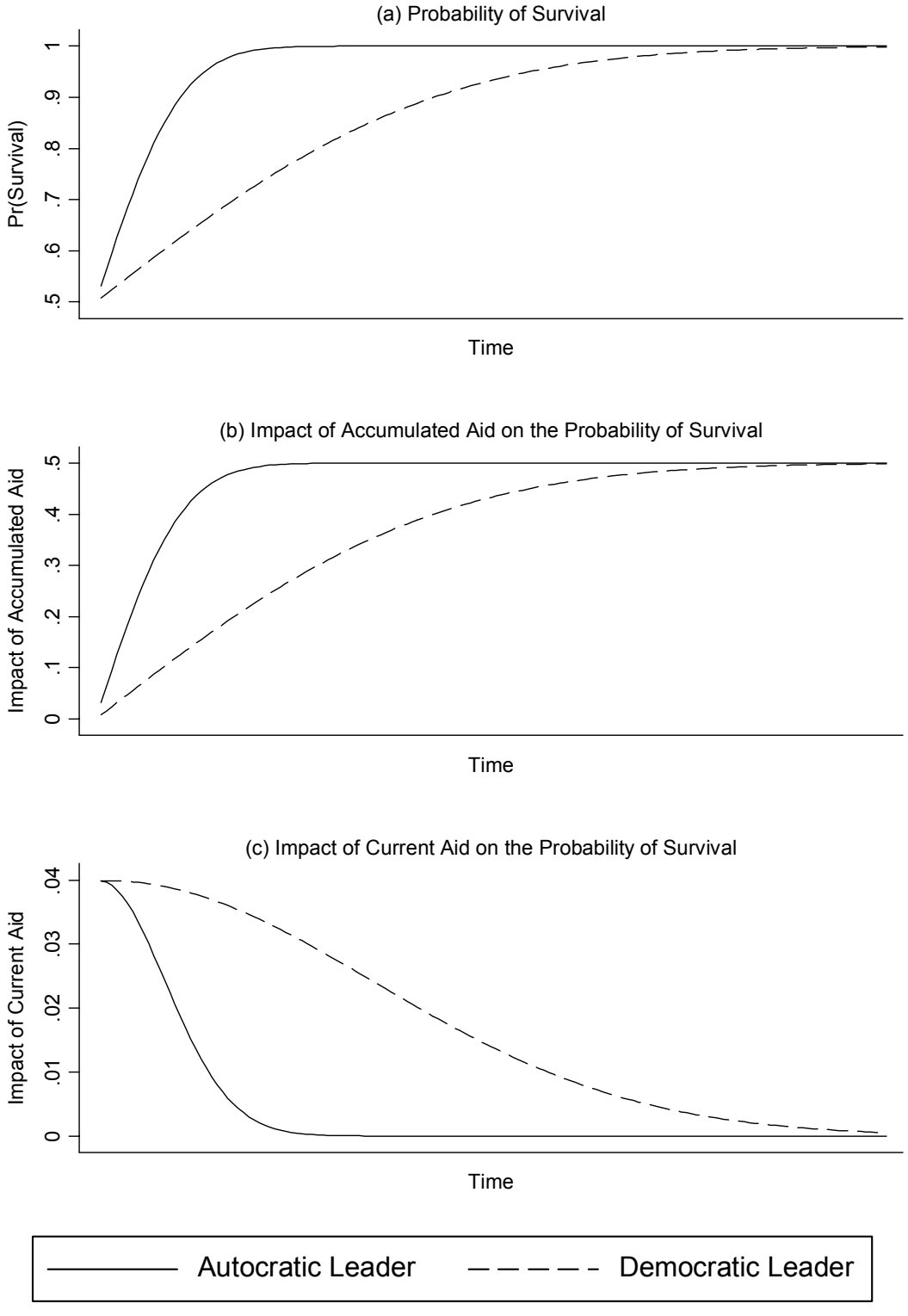


Figure 2. Conditional Effects of Aid on Survival Probabilities, Average Non-Aid Resources > 0

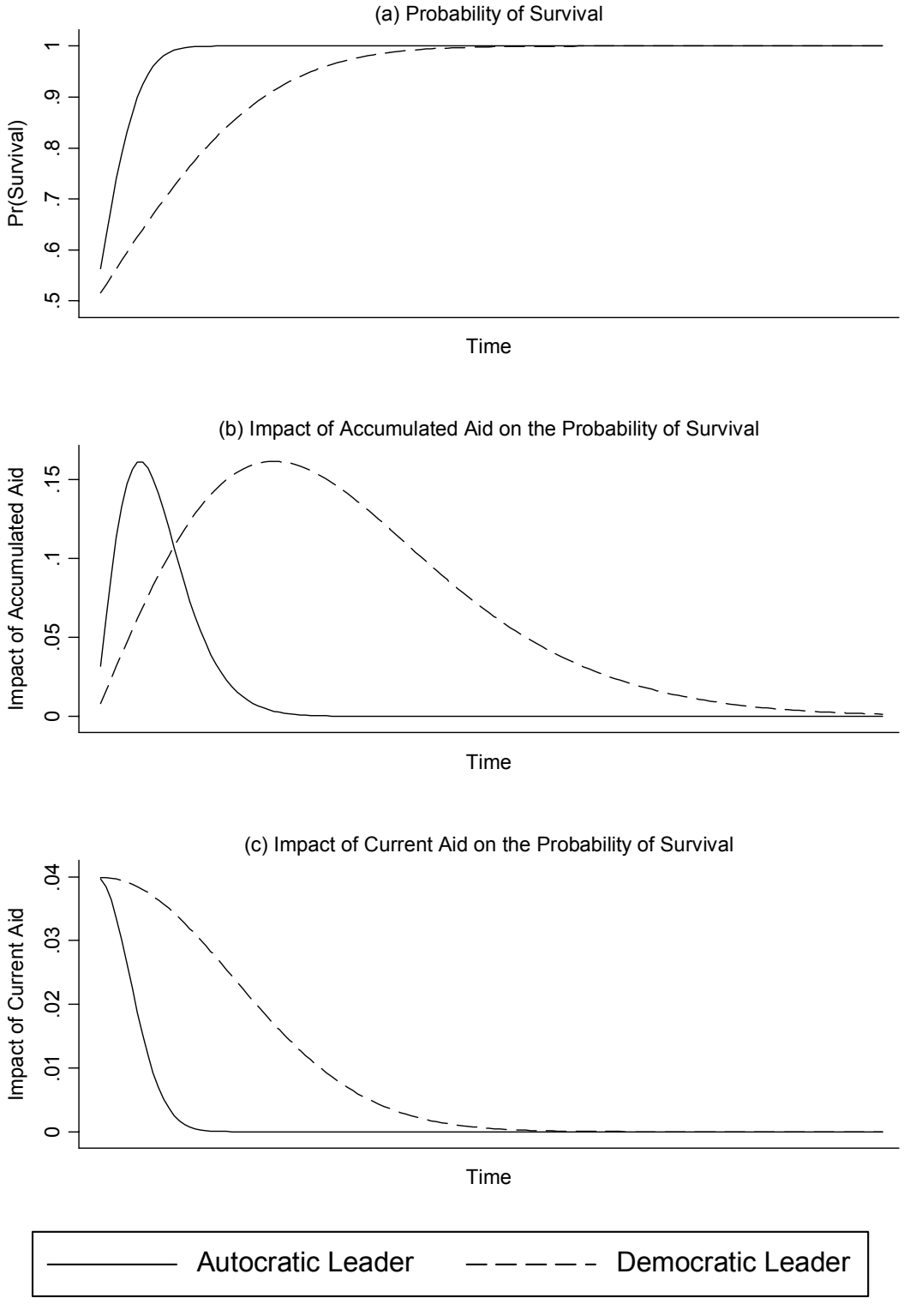


Figure 3. Conditional Effects of Cumulative Aid on Turnover

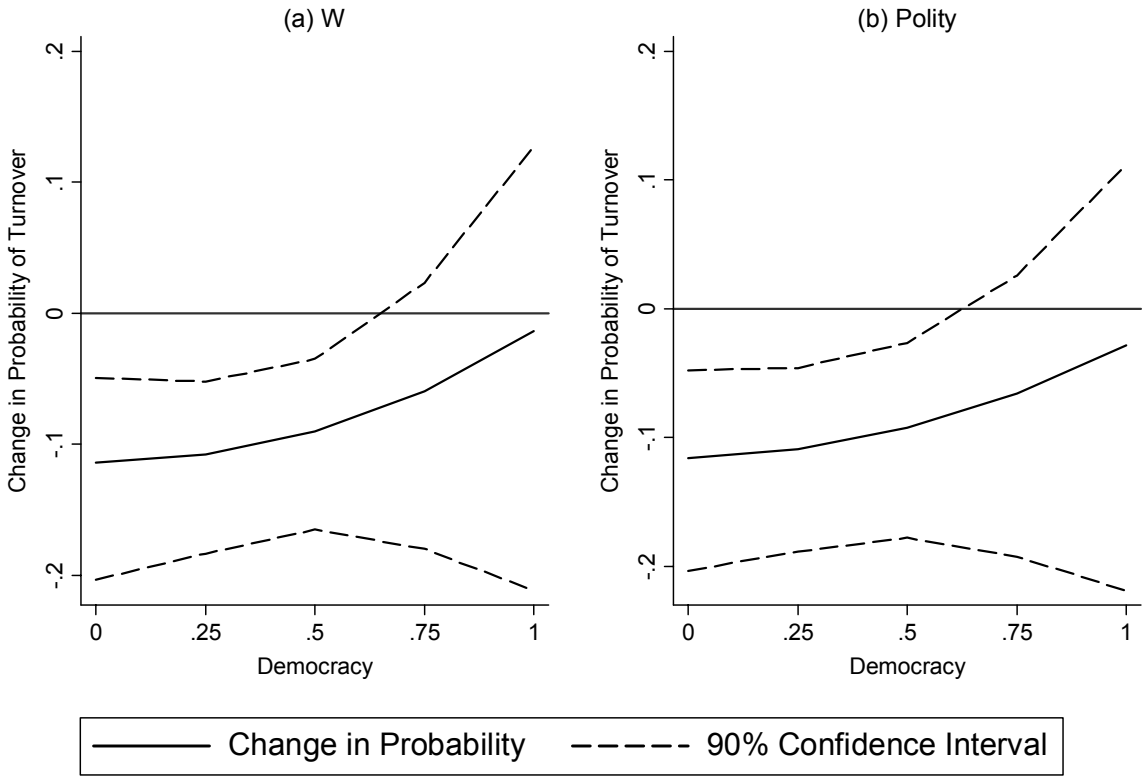
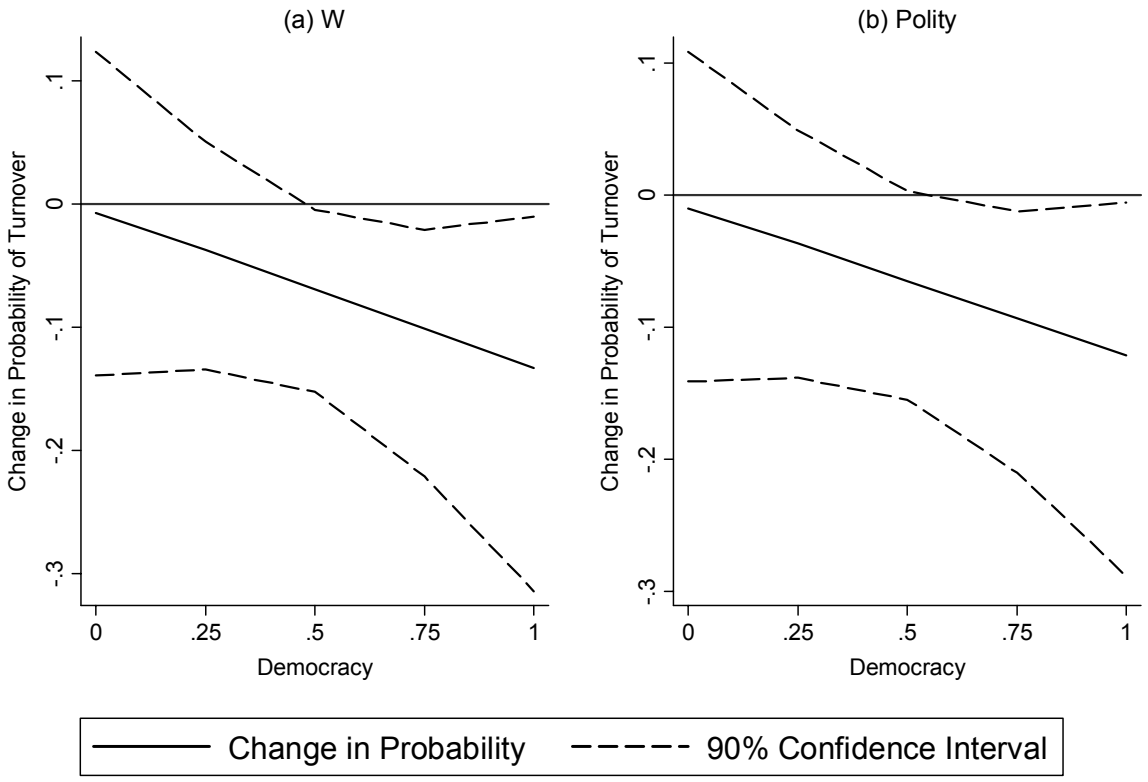


Figure 4. Conditional Effects of Current Aid on Turnover



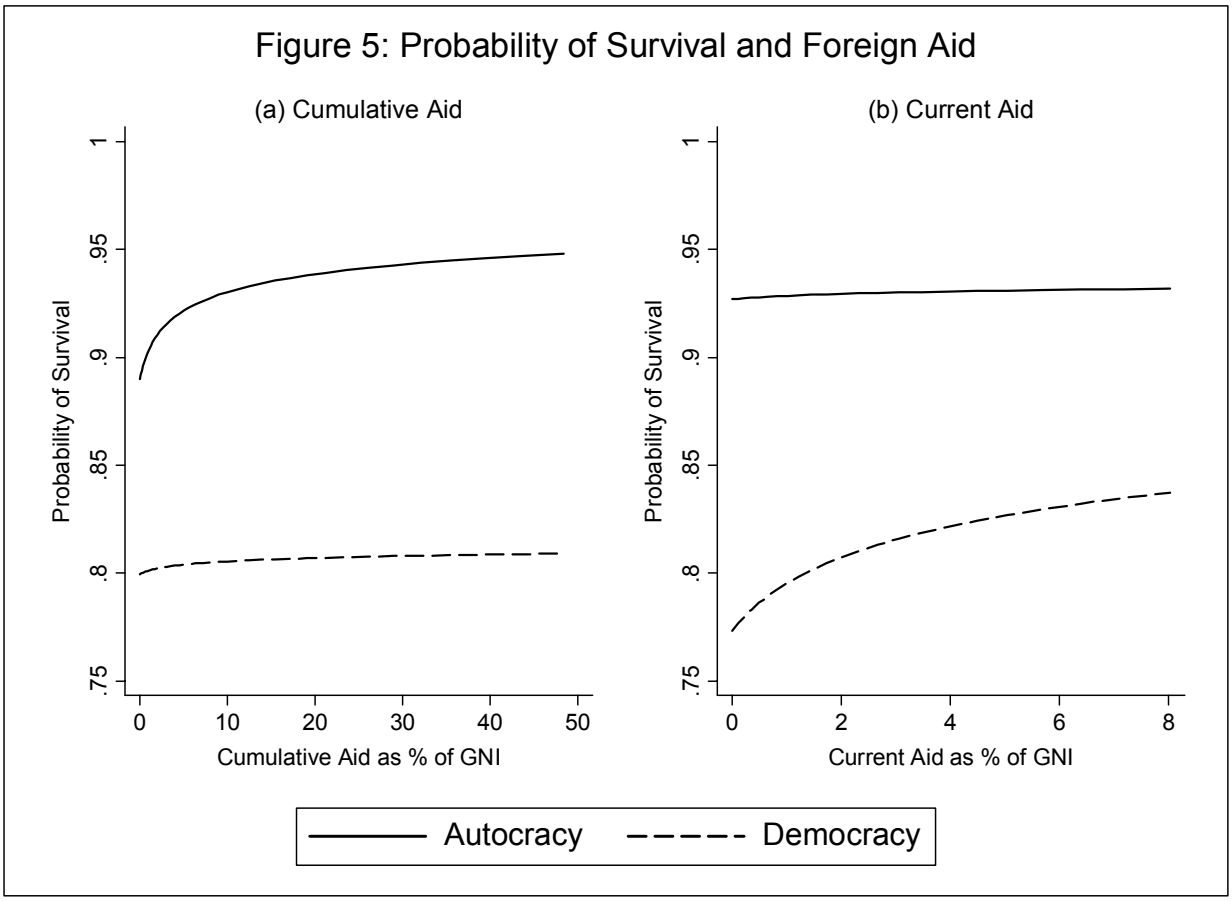


Figure 5: Probability of Survival and Foreign Aid
(a) Cumulative Aid
(b) Current Aid
Probability of Survival
.75
.8
.85
.9
.95
1
0
10
20
30
40
50
Cumulative Aid as % of GNI
2
4
6
8
Current Aid as % of GNI
Autocracy
Democracy